Advertising Assurance

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(Project plans)
Background

• Buy if see a lot of ads because others are seeing the ads and checking out the details (keeping the firms honest)
• E.g., cameras
• Selling to people who know, others are reassured through the ads it’s decent
• Modeling this effect
Model ingredients

- Moral hazard here: unobservable (to some) action – quality
- Contrast many signaling models of ads (money burning)
- Klein-Leffler, Milgrom-Roberts … High quality ads so much as to “smoke out” the low quality

- Moral Hazard or Adverse Selection (hidden type) more intuitive?
- Most cases, quality is a CHOICE variable
- Differences in predictions?
- Empirical distinctions?
Model

- Monopoly:
  \[ \pi = \varphi(p-c)((1-\lambda)D(q-p) + \lambda D(E-p)) - A(\varphi) - K(q) \]

- \( A(\varphi) \) cost of reach \( \varphi \) (e.g., Butters, GS) \( K(q) \) Fixed cost of quality
- \( 1-\lambda \): fraction of \( q \)-informed consumers (zero search costs – find out \( q \); others don’t)
- \( E \) is quality expected by \( q \)-uninformed (\( E=q \) in eq)
Assurance

• Some consumers don’t see q
• Firm chooses q, and also chooses p and φ
• Can use the latter 2 to communicate to consumers what q is, to “discipline” itself
• Therefore ads part of the mix of improving communication, helping improve performance in the presence of moral hazard
Ad role

• Reach AND reassurance, guaranteeing quality incentives – a large (q-informed) consumer base means a lower per capita cost of improving quality

• Ad reach needs to be observed: note it is REACH, not $ -- hence (another reason) why there is a premium on outlets reaching many people at once. Need to communicate others are seeing the ad too.

[note in signaling models that consumers need to infer how much spent]

• Can append Bayesian updating module for how many ads are posted(?)
Relations to literature …

- Special cases of the model (fixing one of $p$, $q$, $\varphi$, and e.g. $\lambda = 0$) include:
  - Fix $q$ (so $\lambda$ irrelevant): Shapiro insufficient Reach model
  - Fix $p$, given $\varphi$: Tirole’s Restaurant near train station disciplined by $\lambda$ to provide quality
  - Fix $\varphi$: price guaranteeing quality (?)
Assurance effects

- In the price and reach focus, we include how these observed variables influence E, the anticipated q. Through the q-foc.
- Insofar as when they are higher they improve E, then there is an assurance effect and a social benefit presumably
\[ \pi = \varphi p \{(1- \lambda)D(q-p) + \lambda D(E-p)\} - A(\varphi) - K(q) \]

- **q:**
  \[
  \frac{d\pi}{dq} = \varphi p (1- \lambda) \frac{dD(q-p)}{dq} - K'(q) = 0.
  \]

- See here if \( \lambda \) goes to one we have pure moral hazard unraveling of no incentive to provide quality. Otherwise, e.g. (IFT):
  \[
  \frac{dE}{d\phi} = \frac{-p (1- \lambda) \frac{dD(q-p)}{dq}}{\varphi p (1- \lambda) \frac{d^2D(q-p)}{dq^2} - K''(q)}
  \]

- From which, if linear demand:
  \[
  \frac{dE}{d\phi} = \frac{p (1- \lambda)}{K''(q)} > 0.
  \]
Price assurance  
(similar for ad reach)  

\[
\frac{d\pi}{dp} = \phi \left[ p \frac{dD(q-p)}{dp} + D(q-p) \right] + \phi p \lambda \frac{dD(E-p)}{dE} \frac{dE}{dp} = 0.
\]

- First term is standard pricing condition, last term is price assurance effect: look at this  
- Use linear demand so  \( \frac{dE}{dp} = \frac{\phi(1-\lambda)}{K''(q)} \)  
- The assurance term becomes  \( \lambda(1-\lambda)\frac{\phi^2 p}{K''(q)} \)  
- maximal “in the middle”:  
- If \( \lambda=0 \), no assurance is needed  
- If \( \lambda=1 \), no assurance is possible (\( q=0 \))
So …

- Is it a reasonable/novel ads role?
- (Testable) differences from signaling/other models?
- Which directions?